

Appln. No. 09/890,550
Reply to Office Action dated August 18, 2003

Docket No. 2000-22

REMARKS

This is in response to the Office Action dated August 18, 2003. This response is filed with a Request for a Retroactive Extension of Time, as well as authorization to charge Deposit Account No. 50-0951 for the appropriate fee. At the time of the Office Action, claims 28 and 41-49 were pending in the application. The Office Action rejected claims 43-49 under 35 U.S.C. §103(a). The rejection is discussed in more detail below.

I. Claim Rejection under 35 U.S.C. §103(a)

Claims 43-49 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,534,328 to Ashmead et al., in view of U.S. Patent No. 4,846,673 to Tsukada as evidenced by U.S. Patent No. 5,964,646 to Kassir et al. Applicants respectfully traverse this rejection.

The wafer grinder table (2) of claim 43 includes a plurality of base materials (11A, 11B), each of which is a ceramic-metal composite formed by impregnating metal silicone in opened bores of a porous body made of silicon-containing ceramic. A bonding layer (14) is formed from the metal silicon to bond the base materials. A fluid passage (12) is formed in a bonding interface of the base materials. By impregnating metal silicone in opened bores of the porous bodies, a table (2) having a very high thermal conductance is provided, so that bending of the base materials (11A, 11B) is avoided. Furthermore, by flowing water through the passage (12), the heat produced when grinding a semiconductor wafer (5) is directly and efficiently released from the table, so that the temperature difference in the table is very small and the thermal uniformity and thermal response are improved.

In contrast, Ashmead et al. is directed to an integrated chemical processing apparatus including laminae, or wafers and three dimensionally tortuous channel. However, the integrated chemical processing apparatus is used to process chemicals along the channel. Accordingly, the apparatus is not related to a wafer grinding apparatus.

Tsukada discloses impregnating metal silicon in opened bores of a porous body, however Tsukada does not disclose a fluid passage, as recited in independent claims 43 and 47.

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Kassir et al. is directed to a grinding apparatus having a resilient pad (26) for used to grind a wafer. However, the resilient pad (26) is not made of a ceramic-metal composite formed by impregnating metal-silicon in opened bores of a porous body made of silicon-containing ceramic. Kassir et al. teaches that the resilient pad (26) is composed of an impervious material such as MYLAR, a polyester (see column 4, lines 23-25). Furthermore, Kassir et al. does not disclose a fluid passage, as recited in independent claims 43 and 47. The resilient pad of Kassir et al. includes perforations. However, the perforations are used for vacuum but not for a fluid passage.


Accordingly, even if Ashmead et al. and Tsukada or Kassir et al. are combined, the teachings of these documents would not result in a wafer grinding table having all the features of independent claims 43 and 47. Thus, claims 43 and 49 are believed in condition for allowance. The dependent claims are also believed to be allowable because of their dependence upon an allowable base claim, and because of the further features recited.

II. Conclusion

Applicant has made every effort to distinguish over the prior art, and it is believed that all claims are in condition for allowance. Nevertheless, Applicant invites the Examiner to call the undersigned if it is believed that a telephonic interview would expedite the prosecution of the application to an allowance. In view of the foregoing remarks, Applicant respectfully requests reconsideration and prompt allowance of the pending claims.

Respectfully submitted,

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